

Please amend the claims by substituting the following listing of claims for the claims in the application as filed.

1 (Currently Amended). A magnetically enhanced plasma source apparatus comprising:

a substrate having a first surface;

a second surface, said second surface being spaced apart from said first surface by a predetermined gap, first and second surfaces with a gap between the surfaces, wherein the first surface comprises a substrate and wherein at least the second surface is connected to a power supply as a cathode;

a third surface connected to the power supply as an anode;

a magnetic field source providing a magnetic field, said a magnetic field passing into both the said first and second surfaces and through the said gap between the surfaces, wherein at least a portion of the said magnetic field having a portion passing through said the substrate is at least two times stronger at the said first substrate surface than at the said second surface, said magnetic field portion having a strength—along that field line and is strong enough to magnetize electrons; and

an electric field created by the power supply connected between extending to said the second surface and the third surface, wherein the said electric field penetrating penetrates into an electron confining region of said the magnetic field.

2 (Currently Amended). The invention of A plasma source apparatus in accordance with claim 1, wherein:

~~the third surface also comprises the said electric field extends to said substrate.~~

3 (Currently Amended). The invention of A plasma source apparatus in accordance with claim 1, wherein comprising:

a chamber, the said chamber containing said first and second surfaces are contained in a chamber comprising grounded walls, and
said electric field extends from said chamber to said substrate
wherein the third surface is the grounded chamber walls.

4 (Currently Amended). The invention of A plasma source apparatus in accordance with claim 1, wherein comprising:

one of the relative movement between said substrate and the said magnetic field is moved relative to the other.

5 (Currently Amended). The invention of A plasma source apparatus in accordance with claim 1, wherein:

said substrate comprises said the second surface is covered by the substrate.

6 (Currently Amended). The invention of A plasma source apparatus in accordance with claim 1, wherein:

said the substrate is biased positively.

7 (Currently Amended). The invention of A plasma source apparatus in accordance with claim 1, wherein:

said the substrate is tied to ground.

8 (Currently Amended). The invention of A plasma source apparatus in accordance with claim 1, wherein:

said the substrate is left floating.

9 (Currently Amended). The invention of A plasma source apparatus in accordance with claim 1, wherein:

said the substrate is biased negatively.

10 (Currently Amended). The invention of A plasma source apparatus in accordance with claim 1, wherein:

an AC voltage is used to bias the said substrate is biased with an AC voltage.

11 (Currently Amended). The invention of A plasma source apparatus in accordance with claim 1, wherein:

said first and second surfaces are parallel.

12 (Currently Amended). The invention of A plasma source apparatus in accordance with claim 1, wherein:

said first and second surfaces are non-parallel.

13 (Currently Amended). The invention of A plasma source apparatus in accordance with claim 1, wherein:

said the substrate comprises a flexible web supported by a conveyor roll.

14 (Currently Amended). The invention of A plasma source apparatus in accordance with claim 1, comprising:

a wherein the mirror field [[is]] shaped into a racetrack and having a with the return field passing through the center of the racetrack.

15 (Currently Amended). A plasma source apparatus comprising:

a substrate comprising a first surface;

a second at least two surfaces with a gap between the surfaces, wherein at least a portion of one of the surfaces is a substrate and wherein at least the non-substrate surface is connected as a cathode electrode;

a gap between said first and said second surfaces;

a mirror magnetic field extending between said first and said second the surfaces through said the gap, wherein

at least a portion of said the magnetic field entering at said first the substrate surface contains field lines being at least two times as strong as said magnetic field at said second surface these field lines entering the cathode electrode;

at least one anode structure disposed such that a closed loop electron Hall current containment region is formed within said the mirror magnetic field, where upon with

sufficient gas pressure and voltage between the cathode electrode and the anode structure, a plasma is formed in the said containment region; and wherein one of the said substrate and said the plasma is moved relative to the other.

16. (Currently Amended). The invention of A plasma source apparatus in accordance with claim 15, wherein:

the substrate comprises a flexible web supported by a conveyor roll.

17. (Currently Amended). The invention of A plasma source apparatus in accordance with claim 15, wherein:

said the substrate is treated by the said plasma with a treatment selected from the group consisting of: a chemical vapor deposition process, a sputter coating process, an ion etch process, and combinations thereof.

18. (Currently Amended). The invention of A plasma source apparatus in accordance with claim 15, wherein:

the said substrate containing surface is electrically floating.

19. (Currently Amended). The invention of A plasma source apparatus in accordance with claim 15, wherein:

said the substrate containing surface is the comprises an anode.

20 (Currently Amended). A method of producing a plasma, comprising the steps of:

providing a plasma source inside a process chamber, said plasma source comprising first and second surfaces with a gap between the surfaces; wherein the providing a substrate comprising said first surface; comprises a substrate and connecting said wherein at least the second surface is connected to a power supply as a cathode; providing a third surface connected and connecting said third service to the said power supply as an anode;

providing a magnetic field passing into both said the first and second surface and through said the gap between the surfaces, wherein at least a portion of said the magnetic field passing through the substrate is at least two times stronger at said first the substrate surface being at least twice as strong as said magnetic field at said than at the second surface along that field line and is strong enough to magnetize electrons; and

providing an electric field created by said power supply connected between said the second surface and said the third surface, wherein the said electric field penetrates penetrating into an electron confining region of the said magnetic field;

adjusting the pressure of said enclosed space between about 1 mTorr and about 100 mTorr; and

introducing a process gas into said process chamber;

operating said power supply to impress a voltage between about 300 volts and about 2000 volts between said anode and said cathode;

operating said power supply to impress a voltage between about 300 volts and about 2000 volts between said anode and said cathode;

~~forming a plasma between said cathode and said substrate, wherein the substrate is treated by the plasma with a treatment selected from the group consisting of: a chemical vapor deposition process, a sputter coating process, an ion etch process, and combinations thereof.~~